

NOTES ON SOME AUSTRALIAN SYRPHIDAE (*DIPTERA*).

By G. H. Hardy.

## Plate 1.

The material dealt with in this paper covers all the sub-families known to occur in Australia, except the *Syrphinae*. The species are studied mostly from the writer's own collection, and specimens identified in other collections are recorded in the text.

Insufficient material is to hand for the purpose of making a satisfactory revision of the family, but some of the more important synonyms so far worked out are recorded here, and an attempt has been made to construct a workable key for such sub-families and genera as are known to the writer from Australia.

The writer is indebted to Mr. C. E. Cole for pointing out that *Microdon brachycerus* Knab and Malloch is a synonym of *M. vittatus* Macquart; and also that *M. daveyi* K. and M. is a synonym of *M. variegata* Walker. Specimens of the latter in Dr. E. W. Ferguson's collection, and examined by the writer, corroborate Mr. Cole's information.

Two species are described as new; one of these belongs to a sub-family in which no Australian species has previously been placed.

*Key to the Australian Syrphidae.*

- |    |   |                       |
|----|---|-----------------------|
| 1. | The antenna with dorsal arista . . . . .  | 2                     |
|    | The antenna with a terminal style . . . . .   | <i>Ceriodinae</i>     |
| 2. | The intermediate cross vein situated before the middle of the discoidal cell . . . . .  | <i>Syrphinae</i>      |
|    | The intermediate cross vein situated at or after the middle of the discoidal cell . . . . .                                     | 3.                    |
| 3. | The cubital vein with a deep deflection encroaching upon the first posterior cell . . . . .                                     | <i>Eristalinae</i> 6. |
|    | The cubital vein without a deflection; sometimes a veinlet issues from the cubital vein into the first posterior cell . . . . . | 4.                    |
| 4. | The cubital vein with a veinlet branching into the first posterior cell   |                       |
|    |   | <i>Microdontinae</i>  |
|    | The cubital vein simple, without a veinlet . . . . .  | 5.                    |
| 5. | The antenna elongate, longer than the length of the head. <i>Chrysotoxinae</i> .  |                       |
|    | The antenna short, shorter than the length of the head. . . . .   | <i>Milesinae</i> 7.   |

*ERISTALINAE.*

- |    |                                     |                       |
|----|-------------------------------------|-----------------------|
| 6. | The subcostal cell closed . . . . . | <i>Eristalis</i> .    |
|    | The subcostal cell open . . . . .   | <i>Orthoprosopa</i> . |

## MILESIINAE.

7. The eyes hairy, the face not protuberant, the epistoma slightly convex.  
The upper marginal cross-vein recurrent . . . . . *Eumerus*.  
The eyes bare, the face protuberant. The upper marginal cross-vein not  
recurrent . . . . . 8.
8. The hind femora with a series of spines on the under side . . . *Xylota*.  
The hind femora without spines . . . . . 9.
9. The epistoma deeply concave and with a very pronounced central knob.  
The marginal cross-vein forming a broken line . . . . . *Criorrhina*.  
The epistoma less deeply concave. The marginal cross-veins forming an  
almost unbroken line . . . . . *Deineches*.

## Sub-family CERIOIDINAE.

*Note*.—This sub-family contains one genus, *Ceriodes* Rondani, which name was created to take the place of the preoccupied *Ceria*, and in the genus three species have been described from Australia. There are four species in the Macleay Museum, but their respective identities are not quite certain.

*Ceriodes australis* Macquart is described from Tasmania, but the genus is not represented from that State in recent collections. It is described as having the first joint of the antennae as long as the scape, and except in *C. breviscapa* the antennae of those under examination have the first joint shorter.

*Ceriodes breviscapa* Saunders is represented by one specimen from South Australia and four from New South Wales. The scape usually very long, is short and practically obsolete in this species.

*Ceriodes ornata* Saunders has the first segment of the abdomen only slightly constricted; in the other species examined the abdomen is strongly constricted at the base. Two species exhibit this abdominal character, and one of these has a pair of callosities on the second abdominal segment. It was found labelled under Saunders' name, and is represented by specimens from Queensland and New South Wales. The second species is without these callosities, and is represented from Queensland.

A further species of *Ceriodes* is represented from Queensland and New South Wales; the chief characters consist of a much constricted abdomen with the constricted portion much longer than in *C. breviscapa*; the cubital vein is deflected and encroaches very deeply into the first posterior cell, but the area within the deflected portion of the cubital vein is hyaline and not brownish like the remainder of the wing above the cubital vein.

## Sub-family CHRYSOTOXINAE.

Genus *Chrysotoxum* Meigen.

*Chrysotoxum bicinetum* Linnaeus, known from Europe and North America, was erroneously recorded from Australia by Walker in 1849.

The species described below as new does not belong to this genus in its restricted sense, but is placed here until its position can be ascertained more satisfactorily.

*Chrysotoxum elongatum* sp. nov.

(Pl. 1, figs. 1 and 2.)

*Description*.—Male. The head is black and more or less semi-globular, broader than high and broader than the thorax, excavated behind. The eyes are

contiguous for a little distance, and are bare with slightly larger facets on the summit than elsewhere. The vertex is a little longer than the maximum width and almost entirely occupied by a black ocellar tubercle on and behind which there is a little yellow hair which extends behind the eyes. The antennae are inserted above the middle of the head, are elongate and porrect; the basal joint is long; the second joint is twice the length of the first; the third joint is a little shorter but broader than the second and bears an arista situated near the base; the basal joints are brown and have a few bristly hairs; and the third joint is black. The epistoma is somewhat convex, without a central knob but protrudes above the oral margin; the checks are very small. The face and antennal triangle are covered with a dense yellow tomentum and some thin yellow hairs. The protuberance above the oral margin and the area behind the oral cone to the rear of the head are black and shining. The proboscis is black.

The thorax is black, but shines slightly with metallic colours on the dorsum; it is covered with a short pubescence which is mostly yellow in colour and near the anterior border there is some white tomentum; ventrally the pubescence is whitish. The thorax is much longer than wide, and the wings are set at about two-thirds its length. The scutellum is similar in colour to the thorax but contains longer yellowish pubescence.

The abdomen is black, very long, tapering to the apex of the second segment, on which is situated a pair of large yellow spots; the third and fourth segments widen out and the abdomen terminates in a rounded fifth segment; the apex of the fourth segment is more or less yellow. The venter is black with the second segment yellow. The abdomen is covered with an unevenly distributed vestiture which is mostly yellow.

The legs have their coxae and trochanters black, the remainder of the anterior and intermediate legs is reddish, covered with a short white pubescence; the posterior femora are reddish with their apices black, they are conspicuously swollen and contain a few minute ventral spines placed in a row towards the anterior side; the posterior tibiae are considerably curved, yellow at the extreme base then black with the central third red, but they vary somewhat in these colours; the posterior tarsi are black; the hair on the posterior legs is whitish.

The wings are hyaline with brownish stigma and veins. The halteres are yellow.

Female. The female has the same general characters as the male, but differs by the eyes being widely separated and the front between them shines black and blue; also the abdomen has the usual elongate shape of a Syrphid and is more or less parallel sided and further it is entirely black, the yellow markings on the second segment of the abdomen being discernible by the less intensely black colour.

*Length.*—10 mm.

*Hab.*—Tasmania; the holotype from Geeveston, 17th Jan., 1916, the allotype from Hobart, 10th March, 1917, four male and three female paratypes from Dunalley, Hobart, and Geeveston, during the months of April, July, September, October, and December. A further small series is in the collection of Mr. C. E. Cole.

New South Wales; one female paratype numbered "41" is in Dr. Ferguson's collection, and is without further data.

*Note.*—This is a very distinctive species that does not seem to have been previously described. The characters of the antennae and the venation are similar to those of the genus *Chrysotoxum*, but the species differs in some other characters, especially that of the abdomen, on which account it may be necessary to remove this species into another genus.

## Sub-family MICRODONTINAE.

Genus *Microdon* Meigen.

Three species of the genus *Microdon* occur on the eastern side of Australia, and two of these extend into Tasmania. They can be recognised readily by the proportion of the antennal joints and in addition *M. variegata* Walker differs from the other two species by having a club-formed abdomen.

Species	Average length of joints of the antennae.				Remarks.
	1st.	2nd	3rd.	Total.	
<i>M. vittatus</i> . . . . .	.5 mm	.2 mm	.5 mm	1.2	Third joint as long as the first.
<i>M. pictipennis</i> . . . .	.6	.2	.9	1.7	Third joint one and one half times the length of the first.
<i>M. variegata</i> . . . . .	.8	.15	2.6	3.55	Third joint three times the length of the first.

*Microdon pictipennis* Macquart.

*Aphritis pictipennis* Macquart, Dipt. Exot., suppl. 4, 1850, p. 129, pl. xii, fig. 12.

*Hab.*—Tasmania and New South Wales.

*Microdon vittatus* Macquart.

*Aphritis vittatus* Macquart, Dipt. Exot., suppl. 4, 1850, p. 129.

*Eumerus transiens* Walker, Ins. Saund. Dipt., 1852, p. 225.

*Microdon brachycerus* Knab and Malloch, *Trans. Roy. Soc. S. Austr.*, xxxvi, 1912, p. 235.

*Synonymy.*—In his description Walker states that a stump of a slightly curved vein proceeds from the upper side of the second submarginal cell; in modern terms this refers to the appendix of the orbital vein in the first posterior cell and denotes that the species is a *Microdon*. A specimen from Sydney agrees with Walker's description in every detail.

*Hab.*—Tasmania, Victoria and New South Wales.

*Microdon variegata* Walker.

*Ceratophila variegata* Walker, Ins. Saund. Dipt., 1852, p. 220, pl. i, fig. 6.

*Mirogaster aphritinus* Thomson, *Eugenies Resa*, Dipt., 1868, p. 491.

*Microdon daveyi* Knab and Malloch, *Trans. Roy. Soc. S. Austr.*, xxxvi, 1912 p. 233.

*Hab.*—New South Wales and Victoria. Two specimens from Victoria are in Dr. Ferguson's collection.

## Sub-family ERISTALINAE.

Genus *Orthoprosopa* Macquart.

*Orthoprosopa* Macquart, Dipt. Exot., suppl. 4, 1849, p. 153.

*Characters.*—This distinct genus appears to be unique to Australia; it contains one rather bare species with an open subcostal cell; the eyes are bare,

touching in the male for a little distance and widely separated in the female; the hind femora are swollen and do not bear a process, a clump of hairs or spines spines.

Type of the genus.—*O. nigra*, Macquart . . . . . Tasmania.

*Orthoprosopa grisea*, Walker.

(Pl. 1, fig. 4.)

*Heliophilus griseus* Walker, *Ent. Mag.* ii, 1835, p. 472. *Id.*, Froggatt, Austr. Insects, 1907, p. 303.

*Meredon contrarius* Walker, List Dipt. B.M., iii, 1849, p. 599.

*Orthoprosopa nigra* Macquart, Dipt. Exot. suppl. 4, 1849, p. 153, Pl. xiii, fig. 5. *Id.*, Skuse, *Proc. Linn. Soc. N.S.W.*, iii., 1888, p. 423 (larvae). *Id.*, Froggatt, *P.L.S.N.S.W.*, xxi., 1896 p. 83, Pl. ix, figs. 6-8.

*Synonymy.*—This species, well known under the name *Orthoprosopa nigra*, appears to have been described by Walker in 1835 under the name *Heliophilus griseus*, and again in 1849 as *Meredon contrarius*; in both these descriptions the species is recorded from "New Holland."

Macquart's genotype was published during the same year as Walker's second description, and Tasmania was given as the locality, but the species is not represented from that State in recent collections.

Genus *Eristalis* Latreille.

*Note.*—Under this genus four names are placed as synonyms under three species. Of the remainder, *E. smaragadi* Walker has been recognised as a distinct species, but *E. fulvipes* Macquart, *E. roderi* Bergroth and *E. maculatus* de Meijere have not been recognised in the collections examined. *E. tenax* Linnaeus is a common introduced species that occurs throughout Australia.

*Eristalis pulchella* Macquart.

*Eristalis pulchella* Macquart, Dipt. Exot. suppl. 1, 1846, p. 127, Pl. xi, fig. 3.

*Eristalis aebutius* Walker, List Dipt. B.M., iii, 1849, p. 630.

*Hab.*—Queensland to Tasmania, and Western Australia. Specimens from Rockhampton and King George's Sound are in the Macleay Museum.

*Eristalis decorus* Macquart.

*Eristalis decorus* Macquart, Dipt. Exot. suppl. 3, 1848, p. 41. *Id.*, Schiner, Novara Reise, Dipt. 1868, p. 362.

*Eristalis sinuata* Thomson, Eugeniés Resa, Dipt. 1868, p. 488.

*Hab.*—Queensland and New South Wales.

*Eristalis punctulatus* Macquart.

*Eristalis punctulatus* Macquart, Dipt. Exot. suppl. 2, 1847, p. 58; and suppl. 4, 1850, p. 137. *Id.*, Grimshaw, Fauna Hawaiiensis, iii, part 2, 1902, p. 82. *Id.*, de Meijere, *Tijd v. Ent.*, li, 1908, p. 265.

*Eristalis agno* Walker, List Dipt. B.M., iii, 1849, p. 626.

*Eristalis epitome* Walker, Ins. Saund. Dipt., 1852, p. 250.

*Synonymy.*—This is a rather variable species for which the above synonymy appears to be correct. Specimens in various collections are labelled *Helophilus bengalensis* Wiedemann, but the species has contiguous eyes in the male and therefore cannot belong to the genus *Helophilus*. In a letter to Dr. Ferguson,

White suggests that the species should be placed in a genus other than *Eristalis*, but does not give his reasons for the change.

*Hab.*—Queensland, New South Wales, Victoria and South Australia. Walker records it from Western Australia and Tasmania.

Sub-family MILESIINAE.

Genus *Eumerus* Meigen.

*Note.*—The species belonging to this genus are about the size of a small species of the genus *Syrphus*, which they somewhat resemble, and are often slightly metallic.

Two specimens are represented from Tasmania, and can be distinguished by the relative size of the hind metatarsis in the male.

Judging from the descriptions only *Eumerus fulvicornis* Macquart, *E. latipes* Macquart, and probably *Meredon muscaeformis* Walker, belong to this genus. *E. marginatus* Grimshaw, described from Honolulu, is stated to be a possible importation to the Hawaiian Islands from Australia.

Genus *Xylota* Macquart.

*Xylota pleuralis* Kertész was described from New South Wales, but the species has not been recognised in the collections examined. The other species belonging to this genus has been recognised.

*Xylota flavitarsis* Macquart.

*Xylota flavitarsis* Macquart, Dipt. Exot., suppl. 1, 1846, p. 134; and suppl. 4, 1850, p. 146.

*Hab.*—Tasmania, a series of both sexes. Victoria, Portland, one female collected by H. W. Davey in the collection of Dr. Ferguson.

Genus *Criorrhina* Meigen.

Under the name *Criorrhina nudiventris*, Macquart has described a species that probably does not belong to this genus.

*Criorrhina spadix* sp. nov.

Pl. 1, figs 5, 6, and 7.

*Description.*—This species is of a beautiful brown, almost red, colour, and the face, tibiae, and tarsi are yellow; the wings are hyaline with the anterior border suffused brown.

*Male.* The head is short, broader than high, about as broad as the thorax and concave behind. The eyes are brown and approximate at a point, not quite touching. The ocellar triangle is brown and about twice as long as the maximum width, and is covered with a vestiture of long brownish yellow hairs; the antennae, inserted about the middle of the head are brown and contain conspicuous hairs. The epistoma is hollow below the antennae, and contains a prominent central knob; the whole face from the antennal triangle to the cheeks is strongly protuberant, brown in colour, but is covered with a tomentum which reflects a golden yellow; so that, where in one position the face is almost entirely brown, in another it appears to be almost completely golden yellow. The cheeks are somewhat small and slightly prominent. The proboscis is black with a slight trace of brown.

The thorax is brown and about as long as broad. A pair of thick median stripes reach two-thirds the length of the thorax; and on each side there is a fur-

ther obscure stripe at about the end of the transverse suture, reaching the apex of the thorax. The whole dorsal surface of the thorax is uniformly covered with a vestiture of rather long thin yellowish hairs, and the anterior border, together with the whole area between the obscure stripes, have in addition to the hairs a yellowish tomentum. Ventrally the thorax is brownish, but somewhat stained with reddish, and is without conspicuous hairs. The scutellum is shining brown, with a similar vestiture to that of the thorax.

The abdomen is somewhat elongate and widest on the third segment. Its length is less than three times the width. There are five conspicuous dorsal segments, the fifth of which is rounded, curving to the underside, and contains the genitalia situated close to the last, apparently the third, ventral segment. The colour of the abdomen is shining brown, covered with pubescence which is longer on the under side; the fifth segment is dull and has the pubescence denser.

The anterior and middle legs are simple; the posterior femora are swollen and the posterior tibiae are bowed. The legs carry soft short hairs, and are without bristles. The coxae and femora are reddish brown, the tibiae and tarsi are yellowish. The hairs on the legs are mostly of the same colour as that part on which they are situated but the femora bear some conspicuous black pubescence on the under side.

The wings are brown along the anterior border, otherwise they are more or less hyaline, and yellow at the base. The halteres are yellow.

*Length*.—Male, 15 mm.

*Hab*.—Tasmania; Hobart. 1st December, 1917. The holotype male is unique.

Genus *Deineches* Walker.

*Deineches* Walker, Ins. Saund. Dipt., 1852, p. 228.

*Note*.—This genus was created by Walker for a large Australian species that comes close to the genus *Criorrhina*, from which it differs apparently only in the veins that run parallel to the apical border of the wing; these veins merge into each other in a more or less unbroken line in *Deineches*, whilst in *Criorrhina* they are separated by a space, thus breaking the line. It is doubtful if this character is sufficient to justify generic separation.

*Deineches nigrofulva* Walker.

Pl. 1, fig. 3.

*Deineches nigrofulva* Walker, Ins. Saund. Dipt., 1852, p. 228, Pl. vi, fig. 7.

*Hab*.—New South Wales; two specimens in the Macleay Museum and one in the Australian Museum.

#### EXPLANATION OF PLATE I.

- Fig. 1. *Chrysotoxum elongatum* sp. nov., male.  
 2. " " " " , the head, seen laterally.  
 3. The head of *Deineches nigrofulva* Walker, male, seen laterally.  
 4. The head of *Orthoprosopa griseus* Walker, male, seen laterally.  
 5. The head of *Criorrhina spadix* sp. nov., male, seen laterally.  
 6. The antennae of the same.  
 7. The wing of the same.